

**PERSONNEL SELECTION, QUALIFICATION AND  
TRAINING REQUIREMENTS FOR DOE NUCLEAR  
FACILITIES**

**REVIEW PLAN**

**For Review of**

**BWXT PANTEX PLANT**



**July 2003**

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Team Leader

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## **1.0 INTRODUCTION**

DOE O 5480.20A, Personnel Selection, Qualification and Training Requirements for DOE Nuclear Facilities requires periodic evaluation of training and qualification programs using DOE Standard 1070-94, Guidelines For Evaluation of Nuclear Facility Training Programs. This standard initiates a framework for consistent, systematic evaluation of DOE nuclear facility training programs through the establishment and use of a uniform set of training program evaluation objectives and criteria. The performance objectives and criteria contained in the Appendix to the standard shall be used by DOE Headquarters and field organizations for the evaluation of nuclear facility training and qualification programs.

This review plan was developed to prescribe the conduct of a review of the training and qualification programs in place to support operations in the nuclear facilities and activities at the BWXT Pantex Plant.

### **1.1 Purpose**

The primary purpose in performing the review is to provide credible, objective, value-added information to NNSA line managers related to the status of the contractor training and qualification programs in place at the Pantex Plant.

This review plan details how the evaluation of the BWXT Pantex training and qualification program will be completed. The review team will use objectives and criteria tailored from DOE Standard 1070-94.

### **1.2 Scope**

The scope of this review includes:

- Review of BWXT training and qualification program organization, staffing, and management to facilitate planning, directing, evaluating, and controlling a systematic training process that support facility missions.
- Review of BWXT training staff's technical knowledge, experience, and instructional skills.
- Review of trainees having met minimum requirements (education, experience, etc.) for entry into the training program.
- Review of training program content.
- Review of training program materials (e.g. tools, equipment, facilities, etc).
- Review of the continuing training program for appropriate plant personnel.

- Review of training program consistency and effectiveness.
- Review of the conduct of training program examinations and evaluations.
- Review the training and qualification self assessment/line management review programs.

### **1.3 Prerequisites**

The prerequisites to be met prior to the review include the following items and activities: (1) an approved review plan, (2) an experienced and trained team approved by the Team Leader, (3) the names and contact information for counterparts, and (4) BWXT list of training evolutions for the month of July 2003.

### **1.4 Sequence of Activities**

The review team may receive briefings to ensure an adequate understanding of the BWXT training and qualification program. The team will have completed preparation of the Criteria and Review Approach Document (CRAD), which will guide the review. The CRAD is attached as Appendix II of this review plan. The team members' biographies are attached as Appendix I.

The team will conduct fieldwork in accordance with the CRAD to sample the actual implementation of training and qualification mechanisms and processes. The team will also review the record of past reviews and corrective actions resulting from those past reviews.

The record of the evaluation will be the Form 1, Assessment Form. A Form 1 will be prepared for each objective in the CRAD and will document the basis for the conclusions reached concerning the objective and criteria. Issues identified during the review of the individual objectives and related criteria that warrant the attention of the PXSO Manager will be clearly identified within the Form 1. Organizational strengths will also be identified. Detailed instructions for completing the Form 1 will be provided to the review team prior to and during the review.

A final report will be prepared which will describe the results of this review. The report will provide the conclusions to the PXSO Manager, as to adequacy of BWXT training and qualification programs.

## **2.0 PREPARATIONS**

Preparations for the review include the development of the CRAD, the writing of the review plan, and review of the provided PXSO and BWXT documents. The team will also receive the site-specific training necessary to conduct the review.

### **3.0 PROCESS FOR THE REVIEW**

As stated, the review will be conducted using the CRAD contained in Appendix II. The criteria and objectives will be evaluated by attending presentations, reviewing implementing documents and manuals of practice, as well as reports produced as a result of past reviews and assessments, interviewing personnel, and observing related activities.

### **4.0 ADMINISTRATION**

#### **4.1 Meetings and Presentations**

BWXT may conduct briefings to the review team for the purpose of familiarizing the team with the training and qualification programs, conducted in accordance with DOE O 5480.20A. The review team will utilize the information provided during the presentations as a part of the evaluation that the criteria and the objectives in the CRAD are met. Additional interviews, record reviews, and field observations will clarify and validate the information in the briefings.

The review will be an open process with the goal of maximizing the opportunity to achieve a full understanding of BWXT's implementation of the order requirements. In order to achieve the level of openness and coordination desired, the team will meet daily to discuss observations and issues. PXSO and BWXT personnel will be invited, in limited numbers, to attend these team meetings as observers. The Team Leader will meet as necessary with senior PXSO management to ensure they are fully informed of the progress and issues identified during the review.

Following the review, the Team Leader will conduct an outbrief with the PXSO Manager (PXSO Manager to specify attendance). The briefing will include the findings by the team and the basis for any recommendations that will be made.

Upon completion of the review, prior to leaving the site, the Team Leader and team members will prepare the draft final report.

#### **4.2 Documentation of the Review**

The review will be guided by the CRAD. The documentation of the review on the Form 1 will be structured in a manner to show that the elements of the CRAD were evaluated and that the criteria were met or what aspects of the criteria were found to be deficient. The purpose of the documentation is to provide information concerning details of the review to individuals who did not witness the review.

In order that the schedule for the review is maintained and that the draft report complete prior to dissolution of the team, each team member must document his/her work as it is conducted. This means

daily input to the Form 1s. Each reviewer will be provided with a preliminary Form 1 containing the objective and criteria for each CRAD. In the event that issues of noteworthy or questionable practices are identified, they will be documented within the Form 1. PXSO and the Team Leader are responsible for ensuring the draft Final Report does not contain classified or Unclassified Controlled Nuclear Information (UCNI).

The lessons learned from reviews are important for future reviews. In that this is the first review under the new CRAD, lessons learned will be particularly important in decisions concerning future similarly structured or follow-up reviews. Team members will draft lessons learned and provide them to the Team Leader. The information will be used for a composite lessons learned section. In addition, the Manager PXSO will be asked to provide recommendations that will improve future reviews at other sites.

### **4.3 Team Composition and Organization**

The review team members will be assigned responsibility for specific CRADs, or portions of CRADs. Each reviewer will be responsible for ensuring that all CRADs assigned are fully evaluated and that the appropriate documentation is prepared. The biographies for each team member are in Appendix I and will be retained with the records of the review. The team consists of the following individuals:

Jeff Underwood, NA-124	Team Leader
Mike Jones, XL Associates	Training Expert
Jim Rhone, Parallax	Training Expert
Dan Bruns, AL Service Center	Weapons Expert
Bill Hicks, Parallax	Management Expert
Sandra Robinson, SAIC	Technical Editor

## **5.0 FINAL REPORT FORMAT**

At the completion of the review, the team will prepare a final report. The final report will consist of the following sections that fully describe the review, provide the requested recommendations, and the information necessary to support the recommendations.

**TITLE PAGE** - states the Site and the dates of the review.

**SIGNATURE PAGE** - used by the Team Leader to promulgate the final version of the report.

**TABLE OF CONTENTS** - identifies all sections and subsections of the report, illustrations, tables, charts, figures, and appendices.

**EXECUTIVE SUMMARY** - provides an overview of the results of the review including a summary of the recommendations that result from the review. The executive summary will identify opportunities for

improvement (issues) as well as noteworthy practices (strengths) identified during the review.

**INTRODUCTION** - includes the overall objectives of the evaluation; the review process and methodologies used in the review; and the team composition.

**OVERALL APPROACH** - restates (with any necessary modifications) the purpose, scope, and approach followed as delineated by the review plan.

**ASSESSMENT OF BWXT** - provides a summary discussion of the overall results of the evaluation. This section will be structured to provide an assessment of the status of training and qualification programs in accordance with DOE O 5480.20A. Finally, any deviations from this review plan will be discussed. Note, Form 1s will provide a complete discussion of the results of the evaluation of the criteria included in the CRAD.

**CONCLUSION AND RECOMMENDATION** –includes the status of training and qualification programs in accordance with DOE O 5480.20A, and appropriate recommendations.

**LESSONS LEARNED** – will discuss lessons learned associated with the review.

**APPENDICES** – Appendix I is the Form 1s.

## **6.0 SCHEDULE**

For planning purposes, the projected schedule for the review of BWXT training and qualification programs is as follows:

July 28	Team travels to Pantex, entry requirements/briefings at approximately 3:00 PM. Team meeting to follow
July 29	0800 Escort team to team room. Team meeting. 0900 PXSO/BWXT in-briefing and introduction of counterparts. 1200 Conduct the review.
August 2-3	Team access to team room for report writing, as necessary
August 4	Complete CRAD field work by close of business
August 5-6	Complete the report and prepare out-briefing
August 7	Out-brief the review
August 8	Team members travel home





## APPENDIX I TEAM BIOGRAPHIES

**Jeff Underwood (Team Leader)** is a Senior Technical Safety Manager with the U.S. Department of Energy, National Nuclear Security Administration. He holds a M.S. in Physics from the Georgia Institute of Technology and a M.A in Business from Webster University. He is a member of the American Society for Quality and the Project Management Institute. He currently is a certified Project Management Professional; previously he has held certification as a Quality Auditor. He has extensive experience in developing and implementing performance based training and in the assessment of performance based training programs.

Prior to DOE, Mr. Underwood's experience included: (1) Nuclear-trained naval officer, (2) Curriculum and Instructional Standards Department Head, and (3) Senior Quality Engineer in private industry. As the head of the Curriculum and Instructional Standards Department he trained Navy instructors and evaluators in performance-based training, evaluated over a hundred technical training courses annually, and oversaw the conversion of training for nonnuclear submarine systems into a performance-based pedagogy. As engineer of a nuclear submarine he developed, executed and evaluated training programs to certify and maintain the qualifications of nuclear propulsion plant operators.

Mr. Underwood is a member of the National Nuclear Security Administration (NNSA), Office of Operations and Construction Management (NA-124), where he is the Pantex Site Lead, responsible to the Deputy Assistant Administrator for Military Applications and Stockpile Management for P450.5 oversight of the Pantex Plant, and for oversight of execution of the Required Technical Base and Facilities budget. He is currently also on special assignment to the Office of Campaigns to assist in development of future plans to ensure the readiness of the nuclear weapons complex.

**Michael S. (Mike) Jones** is a Vice President with XL Associates, Inc. and is XL's Project Manager for all DOE complex support services. Mr. Jones has 31 years of experience in the nuclear power field, including over 8 years in the Navy's Nuclear Power Program. After leaving the Navy, Mr. Jones joined Bechtel Power Corporation as an Instrumentation and Controls field engineer and progressed through Bechtel's engineering and management ranks. At Bechtel, Mr. Jones was a supervising engineer developing new design and modifications for commercial nuclear power generating facilities. In 1995, Mr. Jones joined XL Associates, Inc. and began providing technical and organizational support services to Defense Programs under contract.

Mr. Jones' support for DOE has included the development and deployment of a DOE Confinement Vessel Performance Assurance Standard for the design and procurement of vessels used in explosive confinement experiments; DP-45 ORR team member for PANTEX Building 12-116 Startup (configuration management and quality assurance disciplines); DP-45 ORR team member for Hanford C-106 Tank Evolution (configuration management, engineering, and quality assurance disciplines); and most recently participation as a team member in NNSA's QA Lessons Learned & Best Practices Review at Savannah River, Oak Ridge (Y-12), Nevada Test Site, PANTEX, and LANL.

Mr. Jones holds a BS in Business Management from the University of Maryland's University College.

**Daniel Bruns** is a General Engineer assigned to the Nuclear Explosive Safety Division within the National Security Department, Office of Technical Services, NNSA Service Center. He holds a Bachelor of Science Degree in Electrical Engineering from the University of New Mexico. Since joining the DOE/NNSA, he has served in positions with the Safety Analysis and Support Division, Kirtland Area Office, Weapon Programs Division, and the Environmental Restoration Division. Prior to joining the DOE, Mr. Bruns spent five years in private industry supervising non-nuclear testing and maintenance of Russian TOPAZ II nuclear-powered space reactors and supporting facility equipment and systems as part of a technology transfer between the United States and the former Soviet Union. Prior to the TOPAZ project, he served eight years in the U.S. Navy, with experience covering nuclear reactor operations, maintenance, and training.

Mr. Bruns is trained as a Readiness Review team leader/member and accident investigator, and is certified as a Readiness Review team leader. His experience in surveillance and readiness review activities includes:

- Team Leader for W62 SS-21 Step II Readiness Assessment at Pantex
- Deputy Team Leader for the Separation Test Facility Operational Readiness Review at Pantex
- Team Member for W78 Readiness Assessment (Conduct of Operations) at Pantex
- Team Member for three Readiness Assessments of the Annular Core Research Reactor at Sandia National Laboratories, NM (Conduct of Operations, Configuration Management, and Safety Basis)
- Numerous monthly surveillances of nuclear explosive operations at Pantex

**James (Jim) Rhone** is a Vice President with Parallax, Inc. and is Parallax's Program Manager of NNSA, DOE, and National Aeronautical and Space Administration (NASA) headquarters operations. Mr. Rhone has nearly 30 years of technical and managerial experience supporting the nuclear power industry, DOE, and NNSA. To assist in the Institute of Nuclear Power Operations accreditation training activities for several nuclear power plants, Mr. Rhone provided development and instruction in the disciplines of chemistry, emergency management, environmental surveillance, and aquatic biology. He has served as an Instructional Technologist implementing the Instructional System Design/Systematic Approach to Training processes, performing job/task analyses and serving as a subject matter expert in the areas of chemistry and emergency management. He has written emergency plans, procedures, and scenarios and has provided U.S. Nuclear Regulatory Commission licensing support to nuclear power clients for chemistry and health physics-related issues. Since 1991, Mr. Rhone has specialized in project and contract management and emergency management training for DOE. He has also provided technical reviews of emergency preparedness programs, hazards and radiological hazards assessments, and final safety analyses.

**William (Bill) Hicks** is a Principal Technical Advisor with Parallax, Inc. and has more than 30 years of technical experience supporting the DOE, NNSA, and the Navy nuclear program. His experience

includes conducting Technical Safety Appraisals, Operational Readiness Reviews and Readiness Assessments, Integrated Safety Management System Verifications and management assessments training and mentoring. His experience also includes conduct of examinations of DOE Reactor Prototype sites and nuclear repair bases as well as many Operational Reactor Safeguards Examinations. Mr. Hicks is a primary author of the DOE Order, Technical Standard and Team Leaders Handbook for the conduct of Operational Readiness Reviews/Readiness Assessments (ORR/RA). He is also the primary author of the Integrated Safety Management Verification Team Leaders Handbook. Mr. Hicks has conducted management assessments, served as mentor and developed and conducted training for DOE and Contractor line managers responsible for overseeing and gaining readiness and ORR/RA team leaders and team members at various DOE Sites.

**Sandra Robinson** is a technical analyst with Science Applications International Corporation (SAIC). She has more than fifteen years experience as an environmental and technical analyst providing technical writing, editing, procedure development, regulatory analysis, research, and document control services to the Department of Energy and other government and private agencies. She provides technical editing and coordination for Operational Readiness Reviews (ORR), Integrated Safety Management Verifications (ISMSV), and Accident Investigation review teams at the various sites they visit. She has assisted these teams at the Department's Lawrence Livermore, Los Alamos and Y-12 Sites. She has also assisted in procedure development at Los Alamos, Pantex and Savannah River. Ms. Robinson has participated in numerous EISs and EAs researching cultural resources and providing input for public affair meetings. In addition, Ms. Robinson supports the NNSA-Core Technical Group, NNSA Lessons Learned, and the Office of Strategic Materials Transportation at DOE Headquarters.

## APPENDIX II CRITERIA REVIEW AND APPROACH DOCUMENT

## **OBJECTIVE: TR 1**

**The facility is organized, staffed, and managed to facilitate planning, directing, evaluating, and controlling a systematic training process that supports the facility mission(s).** (5480.20A, Att. 2, Chap 1, pg I-1, pp 2)

### **CRITERIA:**

#### **1.1 Facility line management has overall responsibility and authority for the content and effective conduct of the training and qualification program(s).**

Line management ownership, commitment, and accountability are the foundation for the training and qualification programs at the facility. Line management is responsible for ensuring that these programs will produce competent workers and supervisors. The commitment to the training of personnel at the facility includes participation of line management in all phases of the training program, including attending/monitoring training. Management ensures that resources are available to support the training effort, mandates attendance at training sessions, and is thoroughly knowledgeable of all aspects of the training and qualification program(s) in which that facility's personnel participate.

Management-approved policies and procedures are implemented that promote a systematic approach to training. They adequately describe the duties, responsibilities, and authorities of line and training management, and detail the interfaces involved in implementing the training and qualification programs for both training staff and facility personnel. They also describe the process for the analysis, design, development, implementation, and evaluation of the training programs.

#### **1.2 An organization/person within line management is responsible for the implementation of the training and qualification program(s).**

A training group is established as part of the line organization. If a training group is not separately established, then personnel within the line organization are assigned responsibilities for implementing the training and qualification program(s). At facilities with small staffs and/or training programs, the training group may consist of only one individual, either full- or part-time. However, the job function, responsibilities, authority, and accountability of personnel involved in managing, supervising, and/or implementing training are clearly defined in the incumbent's job description, procedure, or similar document.

#### **1.3 Goals, objectives, and plans are in place to describe the implementation of the training and qualification programs.**

Written goals and objectives related to the implementation of the training and qualification processes are in place and stated in documents such as strategic plans, award fee criteria,

policies, and mission statements. The goals and objectives adequately address the current issues that are important to both contractor management and DOE. Facility line management and the training organization implement specific plans as appropriate to ensure adequate management of the training program.

**1.4 Training records are maintained to support management information needs and to provide required historical data. (Pg I-19, pp 15)**

Training records are maintained in an auditable manner. Training records support management information needs and provide required data on each individual's training participation, performance, and qualification/certification. Training records are also maintained to support verification of the accuracy of training program content.

**1.5 Training developed and/or implemented by personnel or organizations other than the operating contractor's staff is monitored and controlled to ensure that it meets applicable facility requirements.**

Training provided by an outside organization (e.g., sub-contractor, vendor, site central training) in support of the qualification or certification of facility personnel meets the same basic requirements for development, implementation, testing, and documentation as training provided by the facility staff.

**1.6 Training facilities, equipment, and materials effectively support training activities.**

Adequate facilities are available to support safe and consistent training. Sufficient facilities and proper tools, equipment, and materials are available to support applicable training content and performance activities (e.g., hands-on training for maintenance personnel and technicians). Instructional support materials and equipment such as audio-visual equipment, flip charts, and marker boards are adequate to support the training activities. In addition to facilities to support the implementation of training, staff facilities and equipment are available to support analysis, design, development, and evaluation of training. Technical reference materials such as procedures, technical manuals, and drawings are readily available to instructors and trainees on all shifts.

**1.7 Formal programs are in place to grant exceptions to training requirements, and to control/document qualification and certification requirements. (5480.20A, Att. 2, pg I-16, pp 11. & pg I-17, pp12.)**

Some candidates for a position may already possess the knowledge and skills necessary for certain job requirements, and may be excepted from certain areas of training programs on the basis of prior education, experience, training and/or testing. An extension of qualification or

certification may be granted on a case-by-case basis in order to support operational or scheduler commitments. Both processes must be formally controlled and documented.

### **APPROACH:**

**Record Review:** Review approved BWXT policies, records and procedures to 1) understand roles, responsibilities, and authorities; 2) organization; and, 3) the defined interfaces for the Pantex training and qualification program. Review published training goals, objectives, and plans for the training and qualification of training staff and facility personnel. Review BWXT training records, and employment records per 5480.20A requirements. Verify that training records support management information needs. Review approved BWXT policies, records and procedures that control and document the programs for granting exceptions and extensions.

**Interviews:** Interview the PXSO and BWXT Training Managers to understand 1) their roles, responsibilities, and the interfaces; and, 2) the formal control of the granting of exceptions and extensions. Interview BWXT training staff as necessary.

**Observations:** Observe training evolutions as necessary to measure adequacy of training facilities, tool, equipment, and materials.

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### **OBJECTIVE: TR 2**

**Training staff (contractor and subcontractor) possess the technical knowledge, experience, and the developmental and instructional skills required to fulfill their assigned duties.**  
(5480.20A, Att. 2, Pg I-1, pp 2 & pg IV-3, pp 2)

### **CRITERIA:**

#### **2.1 The training staff have and maintain the education, experience, and technical qualifications for their respective positions.**

Instructors have the technical qualifications, including theory, practical knowledge, and experience for the subject matter that they are assigned to teach. Methods are implemented to ensure that individual instructors meet and maintain instructional and technical position qualification requirements. Developmental and instructional qualifications of instructors include theory, practical knowledge, and work experience in analyzing, designing, developing, conducting, and evaluating training, as appropriate to their job assignments.

#### **2.2 A training program is implemented to ensure that training staff gain the knowledge and skills required for their position.**

A training program is in place to develop the necessary instructor capabilities to fulfill training program requirements in all applicable training settings. Training staff and instructors who have not met the qualifications required for an assignment are under the supervision and guidance of a qualified individual. Subject matter experts used occasionally as instructors are provided assistance and are periodically monitored. The instructional skills training program is conducted using approved instructional materials that are based on learning objectives derived from job performance requirements and which provide for effective and consistent presentations.

**2.3 A continuing instructional skills training program is implemented to maintain, improve, and update the knowledge and skills of incumbent training staff based, in part, on the results of instructor evaluations.**

Continuing training includes improvements needed in technical and instructional knowledge and skills, the correction of identified instructional deficiencies, and training on new methods and equipment.

**APPROACH:**

**Record Review:** Review several training/employment records of BWXT training staff to measure appropriate education, experience, and technical qualification for assigned positions. Review approved training program policies, procedures, and records for the implementation of a training staff-training program, and a continuing training program. Review instructor evaluations for evidence of an effective feedback mechanism.

**Interviews:** Interview training managers and staff to measure adequacy of education/technical knowledge, experience, and instructional skills.

**Observations:** Observe training evolutions (as available).

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**OBJECTIVE: TR 3**

**Trainees meet the minimum requirements for entry into the training program.**

(5480.20A, Att. 2, pg IV-1, pp 2)

**CRITERIA:**

**3.1 Entry-level requirements are established for each position and include as applicable the minimum education, experience, technical, and medical requirements.**

Procedures or policies describe the personnel selection and entry-level requirements. Line

management, working with Human Resources personnel, identify the entry-level criteria for personnel working in a particular operating organization and/or assigned to specific duties or tasks. Entry-level requirements address the minimum physical attributes a trainee must possess, as well as the minimum educational, technical, and experience requirements necessary for the employee to meet job requirements.

**3.2 Personnel selected for and/or assigned to the operating organization meet the prescribed entry-level requirements prior to being assigned to a position.**

Line management is responsible for the hiring or transfer of personnel into positions for which entry-level requirements are established. Applicable education, experience, technical, and medical requirements are verified and documented for personnel who are required to meet entry-level requirements.

**3.3 Training program entry-level requirements are reviewed and revised as necessary on the basis of evaluation of trainee performance.**

Entry-level requirements for a training program are reviewed as part of the overall evaluation process. Entry-level requirements are at the proper level to ensure that personnel can achieve the established learning objectives at the completion of training. Individual training course prerequisites are also established and reviewed periodically.

**APPROACH:**

**Record Review:** Review approved BWXT policies and procedures detailing entry-level requirements for minimum education, experience, technical, and medical requirements. Review the current, approved Training Implementation Matrix. Review several employment, training, and medical records to measure compliance with requirements. Review training course materials/records to measure adherence to course prerequisites.

**Interviews:** Interview training managers and staff as necessary.

**Observations:** None required.

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**OBJECTIVE: TR 4**

**Program content for competent job performance is identified, documented, and included in the training programs, as appropriate. (5480.20A, Att. 2, pg I-6, pp b.)**



**CRITERIA:**

- 4.1 The tasks required for competent job performance are identified and documented through a systematic analysis of job requirements. The training program is based on the results of this analysis.** (5480.20A, Att. 2, pg I-6, pp b.)

A systematic analysis of job requirements is conducted to provide reasonable assurance that all tasks that are essential to safe and efficient operation are addressed by the training program. Subject matter experts, line management, and training staff develop and maintain a valid facility-specific task list as the basis for the training program. The facility-specific list of tasks selected for training is reviewed periodically and updated as necessary by changes in procedures, facility systems/equipment, job scope, and advances in technology.

- 4.2 Current facility safety analysis report, procedures, technical and professional references, DOE Guidelines and Orders, and industry operating experience are referenced as applicable to establish both initial and continuing training.** (5480.20A, Att. 2, pg I-5, pp (3))

DOE and other appropriate training guidelines are used as a guide for selecting, sequencing, and verifying training program structure and content. Current facility safety analysis report, operating procedures, technical and professional references, and facility/industry operating experience are used to identify facility specific training content and information for use in developing training materials.

- 4.3 Training for Technical Staff personnel is based on an assessment of position duties and responsibilities.** (5480.20A, Att. 2, pg I-13, pp h.)

A detailed analysis is not necessary to determine training program content for technical staff personnel. Consensus-based content guides (i.e., Guides to Good Practices), broad-based assessments of training needs, and regulatory requirements can be used to assist with the determination of training program content.

This method may also be sufficient to determine training program content for positions at many low-hazard nuclear facilities.

**APPROACH:**

**Record Review:** Review approved BWXT policies, procedure, and records for evidence of a program of systematic analysis of job requirements for appropriate tasks performed in the facility. Review training program technical staff training requirements, and records as necessary to measure conformance to specified requirements. Review the facility-specific list of tasks, and job task analysis program documentation.

**Interviews:** Interview BWXT training program managers and staff as necessary to understand the systematic analysis of job requirements and how it supports determination of training program content.

**Observations:** None required.

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## **OBJECTIVE: TR 5**

**Training program materials identify and support the knowledge and skills needed by trainees to perform tasks associated with the position for which training is being conducted. The content of initial training prepares the trainee to perform the job for which the candidate is being trained. The content of continuing training maintains and improves incumbent job performance. (5480.20A, Att. 2, pg I-6, pp b. & pg I-9, pp d.)**

## **CRITERIA:**

- 5.1 Learning objectives are derived from tasks selected for training. Learning objectives describe knowledge and skills required for successful job performance and are specified in observable and measurable terms.**

Learning objectives are written to reflect task performance and consider the associated knowledge and skills. Training settings are considered when writing learning objectives. Learning objectives include the actions the trainee must demonstrate, conditions under which the action will take place, and standards of performance. The minimum trainee entry-level knowledge, skills, and experience for the position are considered when developing learning objectives. If conditions and standards for knowledge and/or skill objectives are implied, they must be clearly understood.

- 5.2 Lesson plans and other training materials used in the selected training setting (e.g., classroom, laboratory, simulator, individualized instruction, on-the-job training, etc.) are accurate, support the learning objectives, and promote effective delivery of training.**

Lesson plans are developed or modified using learning objectives derived from job performance requirements. The content of lesson plans and other training materials adequately addresses the learning objectives. The lesson plans contain sufficient detail to ensure consistent and repeatable training. Information contained in the lesson plans is sufficient to ensure that personnel are trained to a level required and expected by facility management.

Lesson plans or equivalent training guides are used for laboratory training, on-the-job training, and simulator training and include standards for evaluating trainee performance. Training materials for these non-classroom training settings provide for effective and consistent instruction. The training materials provide sufficient information to guide the trainee and the instructor in the performance of the task. Mock-up units of nuclear weapons used for training shall be evaluated for adequacy for training and testing of personnel on nuclear weapons operations.

The training materials used to guide discussions with technical staff trainees normally are not in lesson plan format; rather training materials include key points that support the learning objectives, taking into account the job position and the experience of the designated instructor. This approach may also be sufficient for much of the training that is conducted at low-hazard nuclear facilities.

**5.3 Review, approval, and control requirements are established and utilized for all training materials.**

Subject matter experts and training management review and concur on training materials. The cognizant line manager approves them prior to use. Training materials are controlled in a manner that ensures that the latest approved version of the material is used.

**5.4 A continuing training program is in place and maintains and improves the knowledge and skills of job incumbents.**

Continuing training content includes refresher training on overtrain tasks, facility and industry events, facility and procedure modifications, retraining addressing task performance deficiencies, and training on infrequently performed tasks.

**APPROACH:**

**Record Review:** Review a representative sample of BWXT lesson plans and training materials to measure derivation of learning objectives from tasks selected for training. Review approved BWXT policy, records, and procedures for 1) lesson plan/training material review, approval, and control requirements; and 2) continuing training program implementation and accomplishment.

**Interviews:** Interview training managers and staff as necessary to understand 1) lesson plan/training material generation, and utilization; and, 2) continuing training program implementation and accomplishment. Interview training managers and staff to understand issues regarding weapons trainer fidelity/usage as a training and qualification tool.

**Observations:** Observe several training evolutions (e.g. classroom, laboratory, or on-the-job) and verify that lesson plans and other training materials are accurate, support learning objectives, and promote effective delivery of training.

**OBJECTIVE: TR 6**

**Training is conducted in the setting most suitable for the particular training content. Training is consistently and effectively presented using approved lesson plans and other training guides.** (5480.20A, Att. 2, pg I-7, pp (3) & pg I-8, pp (4))

**CRITERIA:**

**6.1 Training is conducted using approved and current training materials.**

Lesson plans that meet criterion 5.2 are used to deliver training. Training in all settings is sequenced effectively to provide completion of prerequisite knowledge and skills prior to receiving training on more advanced knowledge and skills.

Individualized instruction, when used, provides the trainees with sufficient guidance and supporting materials for achieving the learning objectives.

**6.2 Training replicates actual job conditions to the extent practical, and allows for direct participation by the trainees.**

Instructors use the references, tools, equipment, and conditions of task performance that reflect actual job conditions to the extent practicable. Trainee demonstration of task performance is evaluated on actual plant equipment whenever feasible.

**6.3 On-the-job training is conducted and evaluated by designated personnel who have been instructed in program standards and methods.**

Line management implements standards and policies pertaining to the conduct of on the-job training (OJT). Personnel who are designated by line management and are trained in the instructional techniques peculiar to OJT conduct and evaluate it. OJT is conducted using valid methods, approved materials, and a planned and logical instructional sequence. Part time OJT instructors and/or evaluators are trained in OJT instructional methods.

Completion of OJT and task qualification is by actual task performance whenever possible. When the task cannot be performed, but is simulated or walked-through, the conditions of task performance, references, tools, and equipment reflect actual performance of the task to the extent feasible. Task performance evaluation is conducted using valid methods and consists of evaluating trainee performance using established standards prior to task or job qualification.

Structured on-the-job familiarization is normally used in lieu of formal on-the-job training and evaluation for managers, non-certified supervisors, and technical staff. During this phase, the candidate works closely with supervisors and managers in their day-to-day job functions, including decision-making.

**6.4 Laboratory training is effectively and consistently presented.**

This Criteria is not applicable to Pantex and will not be evaluated.

**6.5 Simulator training is effectively and consistently presented, where appropriate.**

Training on weapons and component simulators is used to build operating team skills and/or enhance the effectiveness of hands-on skill training. Appropriate simulators are used for hands-on training to demonstrate activity skills and procedural compliance and effectiveness and for recognition and control of normal, abnormal, and emergency conditions. Differences between the simulators and training facilities are accommodated in the training session. Simulators are maintained in satisfactory state of repair and accurately reflect the actual components/assemblies.

**APPROACH:**

**Record Review:** Review appropriate lesson plans and training materials.

**Interviews:** None required

**Observations:** Observe several training evolutions (at least one each of classroom, individualized, and on-the-job, if possible) given the time constraints of the review.

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**OBJECTIVE: TR 7**

**Individual trainees are examined and/or evaluated on a consistent and regular basis to ensure that learning is taking place and that trainees are acquiring the knowledge and skills required to work efficiently and safely at their jobs.**

(5480.20A, Att. 2, pg I-8, pp (5))

**CRITERIA:**

**7.1 Trainees are evaluated regularly using written, oral, and/or performance examinations and quizzes. (5480.20A, Att. 2, pg I-8, pp 4 & pg I-9, pp d. (2))**

Trainees are evaluated on a regular basis. Examinations/evaluations are administered at the conclusion of structured segments of the training program. A sufficient sampling of the knowledge and skill learning objectives is evaluated prior to awarding qualification or certification.

Much of the training for managers, non-certified supervisors, and technical staff personnel occurs in nontraditional settings such as discussions with individual managers. Monitoring and evaluating training in these nontraditional settings are unnecessary. In addition, since many learning objectives for managers, noncertified supervisors, and technical staff personnel do not readily adapt to prescribed standards or quantitative testing, qualitative evaluations are acceptable in many cases. For example, trainees qualification could be assessed from responses during discussions, behavior during role-playing, or material developed during training exercises. Qualitative evaluations may also be used to assess trainee qualification at low-hazard nuclear facilities.

**7.2 Examinations (both written and oral) and OJT, laboratory, or simulator performance evaluations are based on learning objectives, administered consistently, controlled, and documented.** (5480.20A, Att. 2, pg I-8, pp (4) & pg I-15, pp 8.)

Test items are reviewed by subject matter experts for technical content, meaning, and correct answer. The results of the review process are documented. Examination questions are at the proper depth and detail to ensure adequate evaluation of the trainees' knowledge and skills. Examinations and performance evaluations contain a representative cross-section of knowledge, skills, and abilities required for the position. All examination questions relate to one or more learning objectives. Examinations are sufficiently comprehensive and challenging to form the basis for qualification and/or certification of operational personnel.

The acceptance criteria used to grade examinations and performance evaluations are defined in advance of the examination or performance evaluation.

**7.3 The content of written and oral examinations is changed at intervals sufficient to prevent compromise.** (5480.20A, Att. 2, pg I-15, pp 8.)

A policy or procedure is implemented to provide direction for how often and how much examinations are changed to prevent compromise. Examination changes may be based on how often the course of instruction is used and whether the test data is controlled or shared with the trainees as a part of the learning process.

**7.4 Development, approval, security, administration, and maintenance of written and oral examinations, and performance evaluations are formally controlled.** (5480.20A, Att. 2, pg I-15, pp 8.)

A procedure or policy is implemented that controls the development, approval, security, administration, and maintenance of all types of examinations. Access to examinations is physically controlled and limited to designated personnel.

**7.5 Remedial training and reevaluation are provided when examination or performance standards are not met.** (5480.20A, Att. 2, pg I-16, pp 10.)

Remedial training programs are provided as necessary to prepare the trainee to meet the identified training program entry-level requirements for areas where he/she may be deficient. In cases where a trainee fails an examination, remedial training is based upon the weaknesses identified in the examination. Remedial training plans are specified in advance, acknowledged by the trainee and approved by supervision. Completion of remedial training is documented.

**7.6 Requalification and recertification programs are in place for appropriate personnel.** (5480.20A, Att. 2, pg I-3, pp d. & pg I-16, pp 10.)

Operators and their immediate supervisors shall not be allowed to continue to function in qualified or certified positions if they have not completed all of the requalification or recertification program elements within the two-year continuing training cycle.

**APPROACH:**

**Record Review:** Review approved BWXT policy, records, and procedures associated with the training programs conduct of written examinations, oral examinations, and/or performance examination and quizzes. Review evidence of a remedial training and reevaluation program for required training. Review approved BWXT policy, records, and procedures with regard to the requalification and recertification processes.

**Interviews:** Interview BWXT managers and training staff with regard to 1) testing and examination programs; and, 2) requalification and recertification processes.

**Observations:** None required.

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**OBJECTIVE: TR 8**

**A systematic evaluation of training effectiveness and its relation to on-the-job performance is used to ensure that the training program conveys all required skills and knowledge.**  
(5480.20A, Att. 2, pg I-8, pp 5.)

**CRITERIA:**

**8.1 A comprehensive evaluation of individual training programs is conducted by qualified individuals on a periodic basis to identify program strengths and weaknesses.**

(5480.20A, pg 4, pp C. (2) & CRD, pg 1, pp 6)

A policy or procedure describes the long- and short-term requirements for performing program evaluations and provides guidance relative to who does the evaluation, how often evaluations are conducted, and how evaluations are conducted. The results of training program evaluations, including program strengths and weaknesses, are identified, documented, and used as a basis for training program revision on a periodic basis.

**8.2 Instructional skills and technical competencies of instructors are evaluated regularly.**

(5480.20A, Att. 2, pg IV-3, pp g. (2) (c) 1-2)

Instructors are evaluated regularly in all settings in which they instruct by training management, line organization supervision, and peers. The instructors are evaluated against an established set of criteria and the results are used to improve performance.

**8.3 Feedback from trainee performance during training is used to evaluate and refine the training program. Feedback from former trainees and their supervisors is used to evaluate and refine the training program.** (5480.20A, Att. 2, pg I-8, pp (5))

Examination results (written and performance) are analyzed to determine weaknesses in the development or delivery of instruction. Changes to the program content and/or design are made as appropriate. After the trainee has had an opportunity to use the information gained during training, feedback from the trainee and his/her supervisor is used to determine the effectiveness of training. Improvements to the program are based in part on collective trainee/supervisor input as to how well the trainee can perform the tasks for which he/she was trained.

**8.4 Change actions (e.g., procedure changes, equipment changes, facility-specific and operating experience) are monitored and evaluated for their applicability to initial and continuing training programs and are incorporated in a timely manner. Changes in job scope are evaluated to determine the need for revision of initial and continuing training programs.** (5480.20A, Att. 2, pg I-8, pp (5))

Changes that impact training program accuracy are incorporated into the training program in a timely manner and training is provided as necessary to inform facility personnel of changes that have an impact on facility operation. Clear responsibility is assigned for providing facility modification and procedure change information to the training organization.

**8.5 Improvements and changes to initial and continuing training are systematically initiated, evaluated, tracked, and incorporated to correct training deficiencies and performance problems.** (5480.20A, Att. 2, pg I-8, pp (5))



A policy or procedure identifies the requirements and provides the guidance for documenting, evaluating, tracking, and incorporating changes to training programs.

Data from criteria 8.1, 8.3, and 8.4 evaluations form the basis for making program improvements and modifications.

**8.6 Training materials are maintained current, based upon the results of training program evaluations.** (5480.20A, Att. 2, pg I-8, pp (5))

A procedure or policy is developed and implemented that describes the process for revising and documenting training material updates based upon the results of training program evaluation.

**8.7 Training facilities are evaluated to determine their effect on the training process.** (5480.20A, Att. 2, pg I-8, pp (5))

Training facilities are evaluated to determine if they are conducive to the learning process. Classrooms and training settings are free from excessive disturbances and distractions. Trainees have adequate space to work and learn individually and in groups, as appropriate. Conditions related to comfort (e.g., heat, lighting, noise level; desk space, etc.) meet standards for good learning environments. The training staffs office and working spaces are adequate to support the training being developed and presented.

**APPROACH:**

**Record Review:** Review the BWXT program of self-assessment as it pertains to periodic review of training programs, and the documentation of any recently accomplished training program reviews. Review approved BWXT policy, records, and procedures for 1) instructor evaluation; 2) trainee/supervisor feedback on training; 3) formal change control with specified action initiators or triggers; 4) system for initiating, evaluating and tracking improvements and changes; and 5) program for the periodic evaluation of training facilities.

**Interviews:** Interview BWXT managers and training staff as necessary to evaluate the criteria.

**Observations:** None required.

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